**What is claimed is:**

1. A multiprocessor system comprising:

a plurality of processor units coupled together via a backplane; and

a timestamp distribution system for providing a first time signal to the plurality of processor units over the backplane, the timestamp distribution system comprising:

a first timestamp distributor for generating the first time signal, and

a first timestamp communication bus on the backplane for transporting the first time signal from the timestamp distributor to the plurality of processor units;

wherein the first time signal comprises a first time data word that is transmitted at a periodic rate and wherein the first time data word does not change each time the first time signal is transmitted.

2. The system according to claim 1 wherein the first time signal further comprises a first data frame having multiple words wherein the first time data word is one of the words in the first data frame.

3. The system according to claim 2 wherein the first data frame further comprises at least one status data word wherein the status data word reports status information regarding at least one of the plurality of processors.

4. The system according to claim 3 wherein the first data frame further comprises at least one status data word for each of the plurality of processors.

5. The system according to claim 1 wherein the first time signal further comprises a clock signal and a clock enable signal.

6. The system according to claim 1 wherein at least one of the plurality of processors performs some action in response to sensing a change in the first time data word.

15

7.  The system according to claim 6 wherein a plurality of the processors perform some action in response to sensing a change in the first time data word.

8.  The system according to claim 7 the action performed is a data collection action.

9.  The system according to claim 1 wherein the timestamp distribution system further comprises:

a second timestamp distributor for generating a second time signal, and

a second timestamp communication bus on the backplane for transporting the second time signal from the second timestamp distributor to the plurality of processor units;

10. The system according to claim 9 wherein the first time signal further comprises a second time data word that is transmitted at a periodic rate and wherein the second time data word does not change each time the second time data word is transmitted.

11. The system according to claim 9 wherein the first time signal further comprises a first data frame having multiple words wherein the first time data word is one of the words in the first data frame and the second time data word is another word in the first data frame.

12. The system according to claim 11 wherein the first data frame further comprises at least one status data word wherein the status data word reports status information regarding at least one of the plurality of processors.

13. The system according to claim 12 wherein the first data frame further comprises at least one status data word for each of the plurality of processors.

14. The system according to claim 9 wherein at least one of the plurality of processors performs some action in response to sensing a change in the first time data word.

15. The system according to claim 14 wherein a plurality of the processors perform some action in response to sensing a change in the first time data word.

16. The system according to claim 9 wherein the second time signal comprises a second data frame that is transmitted at a periodic rate, the second data frame comprising the first time data word and a second time data word, and wherein the first and second time data words do not change each time the second data frame is transmitted.

17. The system according to claim 16 wherein the second data frame further comprises at least one status data word wherein the status data word reports status information regarding at least one of the plurality of processors.

18. The system according to claim 17 wherein the second data frame further comprises at least one status data word for each of the plurality of processors.

19. The system according to claim 16 wherein at least one of the plurality of processors performs some action in response to sensing a change in the second time data word in the second data frame.

20. The system according to claim 14 wherein a plurality of the processors perform some action in response to sensing a change in the second time data word in the second data frame.

21. The system according to claim 1 further comprising a primary system processor.

22. The system according to claim 21 further comprising a first dedicated link coupling the first timestamp distributor to the primary system processor.

23. The system according to claim 22 wherein the primary system processor is operable to send a real time value to the first timestamp distributor and wherein the first timestamp generator in response to receipt of the real time value resets to a starting state.

24. The system according to claim 21 further comprising a backup system processor.

25. The system according to claim 2 wherein the first timestamp distributor comprises a real time counter for keeping track of time.

17

**26.** The system according to claim 25 wherein the first timestamp distributor further comprises a data insertion model for generating the first data frame.

**27.** The system according to claim 26 wherein the first timestamp distributor further comprises a periodic counter wherein the first time data word is updated in response to a signal from the periodic counter.

**28.** The system according to claim 1 further comprising a system processor and wherein the plurality of processors collect data in response to sensing a change in the first time data word and transmit the collected data to the system processor.

**29.** A network node element in a communication network comprising:

a plurality of processor units coupled together via a backplane; and

a timestamp distribution system for providing a first time signal to the plurality of processor units over the backplane, the timestamp distribution system comprising:

a first timestamp distributor for generating the first time signal, and

a first timestamp communication bus on the backplane for transporting the first time signal from the timestamp distributor to the plurality of processor units;

wherein the first time signal comprises a first time data word that is transmitted at a periodic rate and wherein the first time data word does not change each time the first time data word is transmitted.

**30.** The node element according to claim 29 wherein the first time signal further comprises a first data frame having multiple words wherein the first time data word is one of the words in the first data frame.

31. The node element according to claim 30 wherein the first data frame further comprises at least one status data word wherein the status data word reports status information regarding at least one of the plurality of processors.

32. The node element according to claim 31 wherein the first data frame further comprises at least one status data word for each of the plurality of processors.

33. The node element according to claim 29 wherein the first time signal further comprises a clock signal and a clock enable signal.

34. The node element according to claim 29 wherein at least one of the plurality of processors performs some action in response to sensing a change in the first time data word.

35. The node element according to claim 35 wherein a plurality of the processors perform some action in response to sensing a change in the first time data word.

36. A timestamp distribution system for a backplane system having a plurality of processors, the timestamp distribution system comprising:

a first timestamp distributor for generating a first time signal, and

a first timestamp communication bus on the backplane for transporting the first time signal from the timestamp distributor to the plurality of processor units;

the first time signal comprising a first data frame that is transmitted at a periodic rate, the first data frame comprising a first time data word wherein the first time data word does not change each time the first data frame is transmitted;

the first data frame further comprising at least one status data word wherein the status data word reports status information regarding at least one of the plurality of processors.

37. The timestamp distribution system according to claim 36 wherein the first data frame further comprises at least one status data word for each of the plurality of processors.

**38.** The timestamp distribution system to claim 36 wherein the first time signal further comprises a clock signal and a clock enable signal.

**39.** A method for performing synchronized operations in a multiprocessor system comprising the steps of:

    providing a timestamp distributor system comprising a first timestamp distributor for generating a first time signal and a first timestamp communication bus on a backplane for transporting the first time signal from the timestamp distributor to the plurality of processor units in the multiprocessor system;

    generating the first time signal with the first timestamp generator, wherein the first time signal comprises a first data frame having a first time data word;

    transmitting the first data frame at a periodic rate;

    signaling a plurality of the processor units to perform some action by changing the first time data word, wherein the first time data word is not changed each time the first data frame is transmitted.